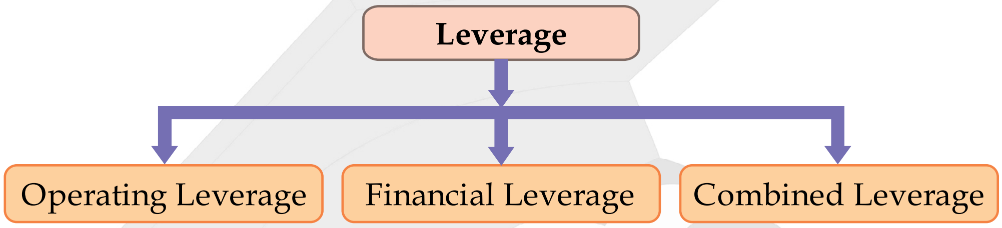
5. *Financial and Operating Leverage*

The employment of an asset or source of funds for which the firm has to pay a fixed cost or fixed return is called leverage. Fixed cost or fixed return means interest which has a considerable influence on the earnings available for equity shareholders.

In other word leverage refers in business terms debt or to the borrowing of funds to finance the purchase of a company's assets. Firms can use either debt or equity to finance or to buy the company's assets. If debt finance is used rather than or beyond a certain limit on equity finance than company take greater risk and it is unfavorable for company.

Types of Leverage



Profitability Statement

Sales	× × ×		
(–) Variable Cost	× ×		
Contribution	× × ×	Operating Leverage	
(–) Fixed Cost	× ×		
EBIT	× × ×		
(Earning Before Interest and Tax)			
(–) Interest	× ×		
(EBT)	× ×		Combined Leverage
(Earning Before Tax)	× ×		
	× × ×	Financial Leverage	
(–) Tax	× ×		
EAT (Earning After Tax)	× × ×		
(–) P.S. Dividend	× ×		
EAS (Earning Available for Equity Shareholder)	× × ×		
÷ No. of equity share EPS	× ×		
(EPS) Earning per share	× × ×		

Operating Leverage

The operating leverage may be defined as the firm's ability to use fixed operating costs to magnify the effect of changes in sales on its earnings before interest and taxes. In other words **Operating leverage measures a company's fixed cost as a percentage of its total cost.** It is used to evaluate the breakeven point of a business, as well as the likely profit levels on individual sales. The operating leverage is higher if the firm has high quantum of fixed cost and low variable costs.

Focus Formula

$$OL = \frac{C}{EBIT} \text{ or } \frac{S-V}{S-V-F}$$

where OL = Operating Leverage
C = Contribution
$EBIT$ = Earnings Before Interest and Tax or Operating Profit
S = Sales
V = Variable Costs
F = Fixed Costs

Degree of Operating Leverage

Degree of operating leverage is the multiple by which operating income of a business changes in response to a given percentage change in sales. It is relationship between operating income and sales of a business. If operating income is more sensitive to changes in sales, the business is said to have high operating leverage and vice versa The DOL measure in Quantitative term the extent or degree of operating leverage.

Focus Formula

$$DOL = \frac{\%\ \text{Change in EBIT}}{\%\ \text{Change in Sales}}$$

where DOL = Degree of Operating Leverage

Ques. *Which formula is used to measure the degree of Operating leverage ?*

(NTA UGC-NET Dec. 2012 P-II)

(A) $\frac{\text{EBIT}}{\text{Sales}}$ (B) $\frac{\text{C}}{\text{EBIT}}$

(C) $\frac{\text{EBIT}}{\text{EBT}}$ (D) $\frac{\text{EBIT}}{\text{C}}$

Ans. (B) $\frac{\text{C}}{\text{EBIT}}$

Ques. *The presence of fixed costs in the total cost structure of a firm results into*

(NTA UGC-NET Dec. 2012 P-III)

(A) *Financial leverage* (B) *Operating leverage*

(C) *Super leverage* (D) *None of the above*

Ans. (B) *Operating leverage*

Ques. *A firm with high operating leverage has :* **(NTA UGC-NET Dec. 2015 P-III)**

(A) *Low fixed cost in its production process*

(B) *High variable cost in its production process*

(C) *High fixed cost in its production process*

(D) *Low variable cost in its production process*

Ans. (C) *High fixed cost in its production process*

Financial Leverage

Financial leverage is concerned with the effect of change in EBIT on the earning available to Equity holder. Financial leverage is the degree to which a company uses fixed-income securities such as debt and preferred equity. A high degree of financial leverage means high interest payments, which negatively effect on earnings per share. Financial leverage is based on assumption that the firm is to earn more on the assets that acquired by the use of funds on which a fixed rate of interest and dividend is to be paid.

Focus Formula

$$FL = \frac{EBIT}{EBT} \text{ or } \frac{EBIT}{EBIT - I}$$

where FL = Financial Leverage
$EBIT$ = Earnings Before Interest and Tax
EBT = Earnings Before Tax

Degree of Financial Leverage

The degree of financial leverage can be measured by percentage change in earning per share in relation to the percentage change in earnings before interest and tax. Generally, a higher DFL state that the company's EPS is more volatile. Therefore, companies that have high DFLs carry higher levels of financial risk and may not be suitable for investors.

Focus Formula

$$DFL = \frac{\%\text{ Change in EPS}}{\%\text{ Change in EBIT}} \text{ or } \frac{\%\text{ Change in EBT}}{\%\text{ Change in EBIT}}$$

where DLF = Degree of Financial Leverage
EPS = Earnings Per Share

Ques. *The degree of financial leverage reflects the responsiveness of* **(NTA UGC-NET June 2012 P-III)**

(A) Operating income to changes in total revenue
(B) EPS to changes in EBIT
(C) EPS to changes in total revenue
(D) None of the above

Ans. (B) EPS to changes in EBIT

Ques. *Financial leverage in a firm is positively affected by* **(NTA UGC-NET Dec. 2013 P-III)**

(A) Intensity of tangible assets (B) Operating leverage
(C) Profitability (D) Tax Rate

Ans. (A) Intensity of tangible assets

Ques. *Financial Leverage is measured by :* **(NTA UGC-NET Dec. 2015 P-II)**

(A) EBIT/EAT (B) EBIT /EBT
(C) EAIT/EBT (D) C/EBIT

Ans. (B) EBIT /EBT

Ques. Assertion (A) : *The primary motive of a company in using financial leverage is to magnify shareholders' return under favorable economic conditions.*

Reason (R) : *To magnify shareholders' return fixed charges funds can be obtained at a cost higher than the firm's rate of return on net assets.* ***(NTA UGC-NET Jan. 2017 P-II)***

(A) (A) is correct and (R) is the correct explanation of (A).

(B) (A) is correct, but (R) is wrong.

(C) (R) is correct, but (A) is wrong.

(D) Both (A) and (R) are wrong.

Ans. *(B) (A) is correct, but (R) is wrong.*

Combined Leverage

Operating leverage measures operating or business risk whereas financial leverage measures financial risk. Combined leverage measures total risk of the business. The combination of operating leverage and financial leverage is called combined leverage or total leverage.

$$\boxed{CL = OL \times FL \quad \text{or} \quad \frac{\text{Contribution}}{\text{EBT}}}$$

Degree of Combined Leverage

The **Degree of Combined Leverage (DCL)** is the leverage ratio that sums up the combined effect of the Degree of Operating Leverage (DOL) and the Degree of Financial Leverage (DFL) has on the Earning per share or EPS given a particular change in shares. This ratio can be used to determine the most optimal level of financial and operating leverage to use in any firm.

$$\boxed{DCL = DOL \times DFL \quad \text{or} \quad \frac{\%\ \text{Change in EPS}}{\%\ \text{Change in Sales}}}$$

Example : A Ltd. has sales of Rs. 10,00,000; Variable Costs of Rs. 7,00,000; Fixed Costs of Rs. 2,00,000 and Debentures of Rs. 5,00,000 at 10% interest. Calculate operating, financial and combined leverages.

Solution : **Profitability Statement**

	Rs.
Sales	10,00,000
Less: Variable Costs	7,00,000
Contribution (C)	3,00,000
Less : Fixed Costs	2,00,000
Profit before Interest and Tax (PBIT)	1,00,000
Less: Interest	50,000
Profit before Tax (PBT)	50,000

(i) Operating Leverage (OL)

$$= \frac{\text{Contribution}}{\text{EBIT}}$$

$$= \frac{\text{Rs. } 3,00,000}{\text{Rs. } 1,00,000} = 3$$

(ii) Financial Leverage (FL)

$$= \frac{EBIT}{EBT}$$

$$= \frac{\text{Rs. } 1,00,000}{\text{Rs. } 50,000} = 2$$

(iii) Combined Leverage (CL)

= Operating Leverage × Financial Leverage

= 3 × 2 = 6

Or

$$CL = \frac{C}{EBIT} \times \frac{EBIT}{EBT} = \frac{C}{EBT}$$

$$= \frac{\text{Rs. } 3,00,000}{\text{Rs. } 1,00,000} \times \frac{\text{Rs. } 1,00,000}{\text{Rs. } 50,000}$$

$$= \frac{\text{Rs. } 3,00,000}{\text{Rs. } 50,000} = 6$$

Ques. ***Statement-I :*** *The presence of fixed operating costs in the operating cost structure of a firm regardless of the volume denotes the presence of financial leverage.*

Statement-II : *Super leverage is the result of the multiplicative combination of the degree of operating leverage and financial leverage.* ***(NTA UGC-NET Sept. 2013 P-III)***

(A) *Both statements are true.*

(B) *Both statements are false.*

(C) *Statement-I is true, but Statement-II is false.*

(D) *Statement-I is false, but Statement-II is true.*

Ans. (D) *Statement-I is false, but Statement-II is true.*

Ques. *The degree of super-leverage would be calculated by :* ***(NTA UGC-NET June. 2014 P-III)***

(A) *Adding DOL (Degree of Operating Leverage) and DFL (Degree of Financial Leverage)*

(B) *Dividing DOL with DFL*

(C) *Multiplying DOL and DFL*

(D) *Subtracting DOL from DFL*

Ans. (C) *Multiplying DOL and DFL*

Ques. *Combined leverage is calculated as :* ***(NTA UGC-NET June 2015 P-II)***

(A) *Operating Leverage + Financial Leverage*

(B) *Operating Leverage – Financial Leverage*

(C) *Operating Leverage × Financial Leverage*

(D) *Operating Leverage ÷ Financial Leverage*

Ans. (C) *Operating Leverage × Financial Leverage*

Trading on Equity

Financial leverage is also known as trading on Equity. The difference between the earning from the assets and fixed cost on the use of the funds goes to equity share holder it is called trading on equity. The suppliers of debt and preference share capital will participate in firm's profits to extent of fixed interest's charges and fixed preference dividend and the remaining profits are available for the owner of equity.

The concept of trading on equity has direct impact on shareholders wealth because equity share holder are considered as the owner of the company and all investment decision are taken in view of maximization of the wealth of the owner. The debt funds are less risky as compared on equity holder because debt provider claims on income received earlier than equity holder.

Trading on equity shows the impact on equity capital but financial leverage explains the impact on EPS and trading on equity is calculated by taking the difference of rate of return on equity capital by having equity and debt components in capital structure.

Indifference Point

The EBIT level at which the EPS is the same for two alternative financial plans is referred to as the Indifference point. If the expected level is to exceed the indifference level of EBIT the use of fixed charge sources funds (debt) would be advantageous from the viewpoint of EPS that is financial leverage will be favorable and leads to increase in the EPS available to the shareholders.

Focus Formula

$$\frac{(X-R_1)(1-T)-PD}{N_1}=\frac{(X-R_2)(1-T)-PD}{N_2}$$

where X = *EBIT at Indifference Point*

R_1 = *Interest in Option 1*

R_2 = *Interest in Option 2*

T = *Tax Rate*

PD = *Preference Dividend*

N_1 = *Number of Equity Shares in Option 1*

N_2 = *Number of Equity Shares in Option 2*

For Example : A Ltd. has a share capital of Rs. 20 lacs divided into 40,000 equity shares of Rs. 50 each. The company can raise additional funds of Rs. 10 lacs for expansion either by issuing all equity shares or all 9% debentures. The company's present earnings before interest and taxes are Rs. 2,80,000. Rate of income tax is 50%. In this case, the point of in-difference will be :

$$\frac{\text{(EBIT - Interest)(1 - Tax) - Preference share Dividend}}{\text{No. of equity share}_1}$$

$$=\frac{\text{(EBIT - Interest)(1 - Tax) - Preference share Dividend}}{\text{No. of equity share}_1}$$

$$=\frac{(X-0)(1-0.5)-0}{60{,}000}=\frac{(X-\text{Rs.}90{,}000)(1-0.50)-0}{40{,}000}$$

$$=\frac{X(0.5)}{60{,}000}=\frac{(0.5)(X-90{,}000)}{40{,}000}$$

or $\dfrac{0.5X}{60,000} = \dfrac{0.5X - 45,000}{40,000}$

or 2X = 3X – 2,70,000 (by cross multiplying)

$\therefore$ X = Rs. 2,70,000

Ques. *When the expected level of EBIT exceeds the indifferent point for two alternative financial plans, (Equity financing and Debt-financing), then* ***(NTA UGC-NET Sept. 2013 P-II)***

(A) The use of debt financing would be advantageous to increase EPS.

(B) the use of equity financing would be advantageous to maximize EPS.

(C) the use of debt-financing would reduce EPS.

(D) the use of equity financing would keep the EPS constant.

Ans. *(A) The use of debt financing would be advantageous to increase EPS.*